Translation

PATENT COOPERATION TREAT

 PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2002P20581WO	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP2003/013096	International filing date (*day/month/year*) 21 November 2003 (21.11.2003)	Priority date (*day/month/year*) 19 December 2002 (19.12.2002)
International Patent Classification (IPC) or national classification and IPC H04N 5/225		
Applicant SIEMENS AKTIENGESELLSCHAFT		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
23 March 2004 (23.03.2004)	01 April 2005 (01.04.2005)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP2003/013096

I. Basis of the report

1. With regard to the **elements** of the international application:*

☒ the international application as originally filed

☒ the description:

pages 1-12, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☒ the claims:

pages 1-12, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____

☒ the drawings:

pages 1/2-2/2, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP 03/13096

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-12	YES
	Claims		NO
Inventive step (IS)	Claims	1-12	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims		NO

2. Citations and explanations

Reference is made to the following documents:

D1: US 2001/055073 A1 (SHINOMIYA KOHJI) 27 December 2001 (2001-12-27)

D2: PATENT ABSTRACTS OF JAPAN Vol. 2002, No. 07, 3 July 2002 (2002-07-03) & JP 2002 077678 A (NEC CORP; NEC ROBOTICS ENG LTD), 15 March 2002 (2002-03-15)

1. Document D1 is considered the prior art closest to the subject matter of claim 1. It discloses (the references in parentheses are to D1):

an imaging apparatus (see figures 6 to 11; paragraphs [0046], [0047] and [0065]) at least for installation into the ceiling area of a motor vehicle for the purpose of detecting an object or an element in the interior of the vehicle, or for installation in the external mirror of a motor vehicle for the purpose of detecting an object or another vehicle in the next lane, characterized by a circuit board for highly complex semiconductors such as microcontrollers, memory devices, etc., with at least one optical image acquisition sensor, and for all of the other components, such as particularly large capacitors, transistors, resistors, coils, plugs, etc., at least

one metallic plate being arranged on, and preferably adhered to, the circuit board.

2. The subject matter of claim 1 thus differs from the known imaging apparatus in that a first circuit board is provided for highly-complex semiconductors such as microcontrollers, memory devices, etc., with at least one optical image acquisition sensor, and in that a second circuit board is provided for all of the other components, such as particularly large capacitors, transistors, resistors, coils, plugs, etc., the first and/or the second circuit board(s) being arranged on, and preferably adhered to, a metallic base plate.

3. Document D2, which is likewise considered relevant prior art, discloses (cf. English-language abstract; figures 1 and 4 of the Japanese publication) an imaging apparatus, particularly for installation into the ceiling area of a motor vehicle for the purpose of detecting an object or an element in the interior of the vehicle, characterized by a first circuit board (reference sign 2) with at least one optical image acquisition sensor, and
a second circuit board for all of the other components (see reference sign 3), from which the subject matter of claim 1 differs in that the first circuit board is provided additionally for highly complex semiconductors such as microcontrollers, memory devices, etc., the first and/or the second (20) circuit board(s) being arranged on, and preferably adhered to, a metallic base plate (40).

Therefore, the subject matter of claim 1 is novel (PCT Article 33(2)).

4. The problem to be solved by the present invention can thus be seen as that of providing an improved imaging apparatus for use in a motor vehicle, with *inter alia* a minimal overall height in the region of the optical module, improved rigidity and good conduction of dissipated heat.

5. The solution to this problem as proposed in claim 1 of the present application involves an inventive step (PCT Article 33(3)) for the following reasons:

   The features disclosed in the characterizing part of the claim, namely the distribution of the components onto two circuit boards, the components with a low overall height, such as the image acquisition sensor, and all of the other highly integrated components being arranged on the first circuit board and all of the voluminous and taller components being arranged on the second circuit board, and at least one circuit board being arranged on a metallic base plate for better heat conduction, permit the problem of interest to be solved in a way that is not suggested by the international search report citations.

6. Claims 2 to 12 are dependent upon claim 1 and thus likewise satisfy the PCT requirements with respect to novelty and inventive step.

7. The expressions "**in particular**" and "**and/or**" used in claim 1 are vague and unclear and leave the reader uncertain as to the meaning of the technical features in question. As a result, the subject matter of said claim is not clearly defined (PCT Article 6).

8. Contrary to PCT Rule 5.1(a)(ii), the description does not cite documents D1 and D2 or indicate the relevant prior art disclosed therein.

9. A document that mirrors the prior art described on pages 1 to 3 was not acknowledged in the description (PCT Rule 5.1(a)(ii)).